FANSTEEL/FMRI SITE REMOVAL OPTIONS
(see attached Figure for locations)

- Former Pond 2 - The open trench had the highest gamma readings noted during the July 2019 survey (45X background). Evaluating location for use as a temporary repository for all on-site radioactive material. Evaluation includes suitability of this site compared to others on-site; likelihood of inundation and or damage from flooding; potential to use in-situ treatments to reduce isotope mobility (like lime for example); and protection of groundwater and surface water and other factors.
    - Estimated dimensions of the Former Pond 2 trench are 200 ft x 100 ft x 8 ft. The actual dimensions and liner type (clay) need to be verified. Approximately 6,000 cubic yards of material from the site could be placed in this area and capped temporarily with HDPE at $60,000 to $80,000
- Sodium Reduction Building - Contains 1000-2000 one ton "supersacks" of soil contaminated with isotopes of uranium and thorium. The way the bags are stacked, and the potential condition of the bags will need to be evaluated before a plan to sample or move them can be created. ODEQ staff have expressed concern regarding tornadic activity at the site dispersing contents of sacks. Currently evaluating:
    - Safety of material at its current location; do we need any engineering controls (results expected within a month of returning to field work)
    - Moving material to a temporary on-site repository at the most suitable location as determined by the current study material could be placed in Former Pond 2 trench at a cost of approximately $30,000-$50,000. Assumes moving the supersacks at a cost of $15/yard (2,000 cubic yards x $15/yard)
    - Off-site disposal to White Mesa, UT (2,000 miles RT) is estimated at $1,675,000. This is based on 170 loads of material disposal at $275/ton disposal; unload/decon fee of $1,000/ load; mileage at $2/mile.
    - WCS in Andrews, TX is 600 miles RT currently under study
- Soil Stockpile - This soil was collected from french drains around now closed ponds. The July 2019, gamma survey indicated 27X background gamma radiation. The stockpile is covered above and below with an HDPE liner. Options:
    - Cover old liner with sand to smooth and cover all with new upper HDPE liner (estimated cost $68,000 - $80,000)
    - Determine if this soil is suitable to close the existing open trench at the Former Pond 2 trench; making that a defacto temporary on-site repository. Estimated dimensions of the soil stockpile are 200 ft x 150 ft x 15 ft or 17,000 cubic yards but this is very conservative. This stockpile slopes towards all edges and it is estimated at 15 ft in height. Need to verify, but placement in Former Pond 2 trench may not be feasible due to volume
    - Ship off-site for disposal (cost estimate expected next week)
    - Off-site disposal to White Mesa, UT (2,000 miles RT) is estimated at $11,675,000. This is based on approximately 1,400 loads of material at $275/ton disposal; unload/decon fee of $1,000/load; mileage at $2/mile
    - WCS in Andrews, TX is 600 miles RT, this option is currently under study

- Additional Data Collection Needed: Gamma Anomalies were identified at Pond 6 and outside Sodium Reduction building. Evaluate source of gamma radiation and develop plan to move radioactive isotopes to a temporary on-site repository.
    - Excavating and moving soil around the site can be accomplished at about $10/yard. This material could be placed in Former Pond 2 trench

- Additional Data Collection Needed - Groundwater and Surface Water Treatment: The facility uses a trench and sump treatment system to capture groundwater from an unconfined alluvial aquifer. The system captures approximately 14,000 gallons per day (gpd). The system is designed to treat metals only and treatment is by manual addition of lime to raise pH and drop metals into several settling ponds set in series. In addition, the facility is under order from the NRC to treat surface and groundwater prior to discharge under a NPDES permit (NPDES Permit requirements attached). This treatment includes partially closed Pond 3 and its associated french drain which contributes 15,000 gpd to the treatment system (approximately ½ of all wastewater treated comes from the Pond 3 area). WIP has been removed from Pond 3. The pond still contains residual radioactive isotopes, chromium, cobalt, manganese, zinc and mercury. Currently studying site to evaluate:
    - Closing and capping Pond 3 to potentially reduce generation of contaminated groundwater;
    - Evaluating whether treatment system is capturing chlorinated solvents and if so, is system adequate to treat them; and
    - Upgrading antiquated manual treatment system.
    - Treatment and collection system are under study